

REMARKS

To further prosecution of the present application, Applicants have amended herein Claims 9-12 and 18-19. In addition, Applicants have added herein new Claims 20-22 which do not introduce subject matter and have antecedent basis in the application specification.

Claims 9-22 are pending in the present application with Claims 9 and 19 being in independent form.

Applicants respectfully request reconsideration.

Rejection of Claims 9-19 Under 35 U.S.C. § 102(b)

Claims 9-19 have been rejected pursuant to 35 U.S.C. § 102(b) as anticipated by WO 96/23024 filed by Kroesbergen (“Kroesbergen”) or anticipated by U.S. 4,466,151 issued to Barch et al. (“Barch”) or anticipated by U.S. 4,810,576 issued to Gaa et al. (“Gaa”). Applicants respectfully traverse the rejections and submit that the cited prior art does not disclose, teach or suggest at least the limitations recited in Claims 9 and 19 discussed below.

With respect to Kroesbergen, Kroesbergen does not disclose, teach, or suggest at least the limitations recited in Claims 9 and 19 directed to:

- (a) ***preparing a liquid aqueous coating composition*** having substantially no particulate components including:
  - (i) a solution of water-soluble, ***superabsorbent polyacrylate polymer precursor in aqueous solution***;
  - (ii) a non-particulate viscosity modifying agent provided in the form of an aqueous solution or dispersion;
- (b) ***applying the liquid aqueous coating composition*** to at least a portion of a the surface of the article to form a liquid coating. (emphasis added).

Applicants submit that Kroesbergen does not disclose, teach, or suggest the method comprising preparing a ***liquid aqueous*** coating composition having substantially no particulate components including a solution of water-soluble, superabsorbent

polyacrylate polymer precursor in aqueous solution and applying the *liquid aqueous* coating composition to at least a portion of the surface of the article. Moreover, Kroesbergen does not disclose, teach, or suggest the liquid aqueous coating composition includes a non-particulate viscosity modifying agent provided in the form of an aqueous solution or dispersion.

The claimed liquid coating composition of independent Claims 9 and 19 is an aqueous-based composition with its components incorporated into the composition in the form of an aqueous solution, dispersion, or emulsion such that the resulting composition contains substantially no particulate components and is applied to a surface of a substrate in the liquid phase.

In contrast, Kroesbergen discloses a method of manufacturing a substrate provided with a coating of super-absorbent material comprising:

- allowing suitable monomers to polymerize in the presence of a catalyst;
- adding a cross-linking agent thereto in order to obtain a *pasty composition*;
- subsequently applying the [*pasty*] *composition* to a substrate and
- allowing the applied [*pasty*] *composition* to cross-link and dry to obtain the substrate with the super-absorbent material. (See Kroesbergen page 4, lines 30-38).

In an alternative embodiment, Kroesbergen discloses the “polymer solution” is prepared by dissolving already-formed polymers in water or an aqueous solvent and adding the cross-linking agent to obtain a pasty composition. (See Kroesbergen page 2, lines 16-21 and page 4, line 40 to page 5, line 2). (“Polymer solution” is defined in Kroesbergen as a polymer-containing liquid phase before addition of a cross-linking agent. See, page 8, lines 29-32).

Applicants respectfully submit that the method of Claim 9 or Claim 19 is different from Kroesbergen’s coating composition and method. In particular, the Kroesbergen coating composition and method require adding a cross-linking agent to a polymer solution to form a pasty coating composition and applying the pasty composition to a substrate. In contrast, the method of Claim 9 or Claim 19 includes preparing a liquid aqueous coating composition having substantially no particulate components, rather than a pasty composition, and applying the liquid aqueous composition to at least a portion of the surface of the article. Kroesbergen does not disclose preparing and applying a liquid

aqueous coating composition to a surface or substrate and is limited to applying a pasty composition.

Nor does Kroesbergen disclose a liquid aqueous coating composition having substantially no particulate components and including a solution of a water-soluble, superabsorbent polyacrylate polymer precursor in aqueous solution. Kroesbergen discloses polymerizing monomers in the presence of a catalyst and, in an alternative embodiment, dissolving already-formed polymers or polymer chains in water or an aqueous solvent and subsequently adding a cross-linking agent to form a pasty composition. (*See* Kroesbergen, p. 2, lines 8-12 and lines 16-20). Kroesbergen also does not disclose applying the coating composition including the precursor in aqueous solution to at least a portion of a surface of an articles, as recited in Claims 9 and 19. Rather, Kroesbergen is limited to polymerized monomers and already-formed polymers or chains of polymers in solution that are subsequently cross-linked and thereafter applied to a surface or substrate as a pasty composition. In this manner, Kroesbergen overcomes prior art problems associated with using dry, granulated superabsorbent polymers. (*See*, Kroesbergen, p. 2, line 38 to p. 3, line 3).

In addition, Kroesbergen does not disclose, teach, or suggest a liquid coating composition including a non-particulate viscosity modifying agent provided in the form of an aqueous solution or dispersion, as Claims 9 and 19 recited. Kroesbergen discloses additives that change the viscosity of the composition including polyacrylates, polyurethane or combinations thereof, but does not disclose such viscosity modifiers are non-particulate and are provided in the form of an aqueous solution or dispersion. (*See* Kroesbergen, p. 3, lines 14-21).

Further, the inventions of Claims 9 and 19 are improvements over the prior art method and composition of Kroesbergen in that the liquid aqueous coating composition may be applied using more rapid coating techniques and methods such as flooding, dipping, spraying and immersing the article in a bath. In contrast, the pasty composition of Kroesbergen is applied by means of brushing, rolling, impregnation by transporting the substrate with the pasty composition through two rollers, and screen printing techniques using a template.

For at least these reasons, Applicants respectfully submit the amended Claims 9 and 19 distinguish Kroesbergen and therefore are not anticipated by Kroesbergen. Applicants respectfully request withdrawal of the rejection of independent Claims 9 and 19 as anticipated by Kroesbergen under § 102(b).

With respect to Barch, Barch does not disclose, teach, or suggest at least the limitations recited in Claims 9 and 19 directed to:

- (a) preparing a liquid aqueous coating composition having substantially no particulate components including:
  - (i) a solution of *water-soluble, superabsorbent polyacrylate polymer precursor in aqueous solution*.
- (d) heating the article to cure the superabsorbent polyacrylate polymer precursor by cross-linking to form *the superabsorbent, water-resistant polymer that absorbs water when it is wetted and desorbs water when it is dried*.

In a prior Office Action, the Examiner indicates that while Barch may not explicitly recite superabsorbent properties as claimed, it is reasonable that the article of Barch would possess such superabsorbent properties because the compositions of Barch and the claimed compositions are the same. (See Office Action of 11/28/05, p. 3). Applicants respectfully disagree that the glass fiber treatment or sizing compositions of Barch are essentially the same as the claimed compositions and would possess the same superabsorbent properties.

In particular, Barch does not disclose, teach, or suggest preparing a liquid aqueous coating composition including a solution of water-soluble superabsorbent polyacrylate polymer precursor in aqueous solution and heating the article to cure the precursor to form a superabsorbent, water-resistant polymer that absorbs water when it is wetted and desorbs water when it is dried. Barch discloses an applicator for applying coating compositions to a surface or substrate that includes one or more surfaces or mats of glass fibers that apply the coating composition to the surface or substrate. (See Barch Figs. 1, 2, 3A and 4). A chemical treatment is applied to glass fibers after their formation to protect the fibers from intra-filament abrasion and to achieve a desired surface tension

between the fibers and the coating composition to be applied to a surface or substrate. (See Barch, col. 5, lines 61-68). The chemical treatment or sizing compositions include a solution, emulsion, dispersion or mixture having a carrier, such as an organic solvent or water, a film forming polymer, and compatible coupling agent. (See Barch, col. 6, lines 10-17). Barch discloses a number of potential film forming polymers and mixtures thereof that can be modified to achieve a desired surface tension for the glass fibers to maximize or minimize pick up and release of the coating composition to be applied to a surface or substrate. (See, Barch, col. 6, lines 18-55). However, Barch does not disclose, teach, or suggest any of the film forming polymers include a solution of a water-resistant, superabsorbent polyacrylate polymer precursor in solution, as specified in Claims 9 and 19. In addition, Applicant submits that the film forming polymers Barch discloses do not include a superabsorbent polyacrylate polymer or a superabsorbent polyacrylate polymer precursor in aqueous solution because one object of Barch treating the glass fibers is to create a surface tension between the glass fibers and the coating composition to be applied by the applicator. Should the film forming polymers of Barch include a superabsorbent polyacrylate polymer or a superabsorbent polyacrylate polymer precursor in solution, the required surface tension between the glass fibers and the coating composition to permit the glass fibers to pick up and release of the coating composition would not be feasible. Rather, the superabsorbent polymer component of the sizing would absorb the coating composition, or some aqueous component thereof, when the glass fibers are wetted with the coating composition, inhibiting the release of the coating composition from the glass fibers to a surface or substrate and thereby impairing the performance of the applicator. Applicants therefore submit that the glass fiber treating compositions or sizings of Barch are not the same as the claimed compositions.

Moreover, glass fiber treating compositions or sizings having the claimed superabsorbent properties would be disadvantageous to or negatively affect the performance of the Barch applicator in applying a coating composition to a surface or substrate. Barch discloses that the glass fibers of the invention are more resistant to chemicals and solvents used in coating compositions and the glass fibers are less prone to dimensional change when subjected to water and other solvents for long periods of time. (See Barch col. 5, lines 8-12). Barch also discloses the glass fibers do not swell, when in

contact with these materials, and the glass fibers maintain a high degree of rigidity and good fiber continuity, whereas most fibers, when wet from a coating media, tend to lump together producing an effect referred to as rat tailing. Barch discloses that the good fiber continuity is a result of adjustable surface tension of the glass fibers via chemical treating compositions or sizings. (*See* Barch col. 5, lines 12-22).

Thus, Applicants submit that should the glass fiber treating compositions or sizings of Barch include a solution of water-soluble superabsorbent polyacrylate polymer precursor in aqueous solution and the resulting superabsorbent, water-resistant polyacrylate polymer that absorbs water when it is wetted and desorbs water when it is dried, the superabsorbent polyacrylate polymer of such compositions or sizings would absorb the coating compositions, or an aqueous component of the coating compositions, to be applied by the applicator. As a result, films or sizings on the glass fibers would swell upon absorption thereby causing a dimensional change or increase in size of the glass fibers and/or causing the glass fibers to lump together, which are properties the Barch invention attempts to avoid. As Barch discloses, the glass fibers of the applicator invention do not swell, when in contact with coating compositions, and the glass fibers maintain a high degree of rigidity and fiber continuity. Should the glass fiber compositions or sizings of Barch include a superabsorbent polyacrylate polymer or have superabsorbent properties, the surface tension between the glass fibers and the coating composition to pick up and release the composition to a surface or substrate would be impaired or would at least compromise or impair the performance of the applicator. In addition, the above-noted advantageous properties of the glass fibers that Barch discloses would not be achieved if the treating compositions or sizings had superabsorbent properties. Therefore, Applicants respectfully submit that it is not reasonable that the applicator of Barch would possess the claimed superabsorbent properties as the Examiner contends.

For at least these reasons, Applicants respectfully submit the amended Claims 9 and 19 distinguish Barch and therefore are not anticipated by Barch. Applicants respectfully request withdrawal of the rejection of Claims 9 and 19 as anticipated by Kroesbergen under § 102(b).

With respect to Gaa, Gaa does not disclose, teach, or suggest at least the limitations recited in Claims 9 and 19 directed to:

- (a) preparing a liquid aqueous coating composition having substantially no particulate components including:
  - (i) a solution of *water-soluble, superabsorbent polyacrylate polymer precursor in aqueous solution*.
- (d) heating the article to cure the superabsorbent polyacrylate polymer precursor by cross-linking to form *the superabsorbent, water-resistant polymer that absorbs water when it is wetted and desorbs water when it is dried*.

In a prior Office Action, the Examiner indicates that while Gaa may not explicitly recite superabsorbent properties as claimed, it is reasonable that the article of Barch would possess such superabsorbent properties because the compositions of Barch and the claimed compositions are the same. (*See* Office Action of 11/28/2005, p. 3). Applicants respectfully disagree that the coating compositions of Gaa are essentially the same as the claimed compositions and would possess the same superabsorbent properties.

Gaa discloses chemical treating compositions for glass fibers that are produced as continuous or chopped fibers to form glass fiber-containing paper and nonwoven, sheet-like mats of chopped glass fibers or strands that serve as base materials for roofing shingles, BUR systems, and flooring. (*See* Gaa, col. 1, lines 46-55 and col. 3, lines 20-27). Gaa discloses glass fibers treated with an aqueous chemical treating composition that has at least one water-soluble, ungelled polymer. The water-soluble, ungelled polymer may include one or more water soluble, polyoxyethylene polymers. (*See* Gaa col. 3, lines 55-60). Other possible polymers include polyacrylic acid neutralized base, polyacrylamides, polyvinylpyrrolidone, polyvinyl alcohol and blends thereof. (*See* Gaa col. 6, lines 53-60). The treating composition may further include one or more water soluble, dispersable and/or emulsifiable cationic lubricants, aldehyde-condensate-reactable polymeric agent (such as polyacrylamide and polyamide polymers), one or more aldehyde-condensate-reactable coupling agents (such as organosilanes), and a carrier (such as water). The Examiner indicated in the Office Action that Gaa disclosed the claimed aqueous solution of a neutralized polyacrylate (or the claimed superabsorbent

polymer), polymeric agents such as polyacrylamide (viscosity modifier), lubricants and film-forming polymers (binder). (See Office Action, p. 3).

As mentioned, the Examiner contends that although Gaa does not explicitly disclose the superabsorbent properties of the claimed liquid aqueous coating composition, the treating compositions of Gaa would have such superabsorbent properties because the compositions Gaa discloses are the same as the claimed compositions. Applicant respectfully submits that Gaa does not disclose, teach, or suggest the claimed superabsorbent properties, nor the claimed solution of a water-resistant, superabsorbent polyacrylate polymer precursor in aqueous solution or the resulting water-resistant, superabsorbent polyacrylate polymer of the claimed coating, as the Examiner contends, because such water-resistant, superabsorbent polymer and properties would be detrimental to the glass fiber paper and glass fiber nonwoven mats that are produced from the coated glass fibers of Gaa. In particular, the nonwoven mats of coated glass fibers are used as base materials for roofing shingles and flooring and as glass fiber paper. Should the glass fibers of such mats or paper include a coating that has water-resistant, superabsorbent properties, the resulting mats or paper would absorb water when wetted and, as a result, would change in dimension, e.g., swell, and would compromise or would be detrimental to the roofing, flooring and paper materials made of the sized glass fibers. Therefore Applicant submits that because Gaa does not disclose, teach, or suggest the noted limitations of Claims 9 and 19 discussed above, nor the claimed superabsorbent properties, and further because imparting superabsorbent properties to the glass fibers of Gaa would be detrimental to their applications in nonwoven mats and paper, Claims 9 and 19 are not anticipated by Gaa.

For at least these reasons, Applicants respectfully submit the amended Claims 9 and 19 distinguish Gaa and therefore are not anticipated by Gaa. Applicants respectfully request withdrawal of the rejection of Claims 9 and 19 as anticipated by Gaa under § 102(b).

Claims 10-18 depend from Claim 9 and are patentable over the cited prior art references for the reasons given above. Applicant respectfully requests withdrawal of the rejection of Claims 10-18 under § 102( b).



Rejection of Claims 9-19 Under 35 U.S.C. § 103(a)

Claims 9-19 have been rejected pursuant to 35 U.S.C. § 103(a) as being unpatentable over Barch and unpatentable over Gaa. Applicants respectfully traverse the rejections and submit that the cited prior art does not disclose, teach or suggest at least the limitations recited in Claims 9 and 19 discussed above.

As discussed, the treating or sizing compositions disclosed in Barch and Gaa are directed to coating or treating glass fibers to prevent intra-filament abrasion between fibers, to add strength to fibers, and, in the case of Gaa, to provide surface tension between the glass fibers and a coating composition to be applied to a substrate or surface. The Examiner contends that because the compositions of Barch and Gaa are the same as the claimed compositions that it is reasonable to assume the compositions of Barch and Gaa have superabsorbent properties. The Examiner admits in the Action that Barch and Gaa do not explicitly disclose superabsorbent properties. Applicant therefore submits that one of ordinary skill in the art would not be motivated to apply such treating or sizing compositions with superabsorbent properties to glass fibers based on the disclosures of Barch or Gaa because Barch or Gaa clearly are treating/coating glass fibers for applications in which superabsorbent properties are not required or desired and, more importantly, would be detrimental to or compromise the applications in which the glass fibers are used. The Examiner does not cite any disclosure of Barch or Gaa that that would provide such motivation to one of ordinary skill nor has the Examiner provided a reasoning based upon the Barch or Gaa disclosures that would motivate one of ordinary skill to impart superabsorbent properties to such treating or sizing compositions.

In addition, neither Barch or Gaa disclose, teach, or suggest the limitation to a preparing a liquid aqueous coating composition comprising a solution of a water-resistant, superabsorbent polyacrylate polymer precursor in aqueous solution and applying the liquid aqueous coating composition (including the precursor) to at least a portion of a surface of an article. In contrast to these limitations, Barch and Gaa do not disclose applying a polymer precursor in aqueous solution to a surface or substrate.

Further, the Examiner indicates that the claimed method must result in a structural difference between the claimed method and the prior art in order to patentably distinguish the claimed invention over the prior art. The Examiner further indicates that the prior art

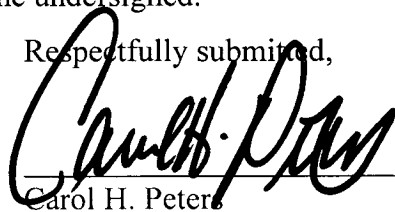
product of the claimed method would possess the presently claimed superabsorbent properties. Applicants respectfully disagree. The claimed method produces a product exhibiting the claimed superabsorbent properties that is structurally different from the coatings or films that the Barch and Gaa treating or sizing compositions produce on glass fibers. The polymer coating product produced by the claimed method includes a superabsorbent polymer that absorbs water when wetted, such that, the coating would swell, and desorbs water when dried. Applicants submit that the coatings or films on the glass fibers of Barch and Gaa do not possess the ability to absorb water and therefore are not structurally the same as the prior art films or coatings.

For at least these reasons, Applicants respectfully submit the amended Claims 9 and 19 distinguish Barch and Gaa. Applicants respectfully request withdrawal of the rejection of Claims 9 and 19 as being unpatentable over Barch or Gaa under § 103(a).

Claims 10-18 depend from Claim 9 and are patentable over the cited prior art references for the reasons given above. Applicant respectfully requests withdrawal of the rejection of Claims 10-18 under § 103(a).

Based upon the foregoing amendments and discussion, Applicant respectfully submits the claims are patentable over the cited prior art and requests an action to this effect. Should the Examiner have any questions concerning this response, Applicants respectfully request the Examiner contact the undersigned.

Respectfully submitted,



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